The IR-4 Project
Pest Management Solutions for Specialty Crops and Minor Uses

Newsletter
Vol. 41Number 1
January 2010

The IR-4 Public Health Pesticides Program

— by Karl Malamud-Roam, IR-4 Public Health Pesticides Program Manager

The latest IR-4 program, which supports the development and registration of new pesticides to protect public health, was initiated during 2009. The IR-4 Public Health Pesticides (PHP) Program complements the traditional strengths of IR-4 in fostering safe and effective pest control for small agricultural markets. The program expands the IR-4 mission to include critical pest control niche markets outside agriculture. The initiation of the PHP Program followed the adoption of an agreement between IR-4, USDA's Agricultural Research Service, and the US Department of Defense in late 2008. Initial funding for the Program for five years was committed by the military's Deployed Warfighter Protection Program (DWFP), in recognition of the critical need to develop new tools to protect soldiers and sailors from arthropod-borne diseases. A major milestone was recently reached with the hiring of Program Manager, Dr. Karl Malamud-Roam, who began work at IR-4 Headquarters in mid-September.

Pesticides are used to protect public health in many ways. Many insecticides used in agriculture are also effective toxicants against arthropods, such as mosquitoes or ticks, common vectors of infectious human diseases. In addition, insect repellents, whether applied to the skin, used to treat cloth, or used for area-wide protection, such as burnable coils, are registered as pesticides. Insect attractants used in trap-and-kill devices are also public health pesticides if the traps are focused on disease vectors. Many types of chemicals aimed at controlling non-arthropod organisms can also be classified as public health pesticides; rodenticides and antimicrobial chemicals applied to the environment, for example, can fall into this category (in contrast, antimicrobial chemicals that are ingested are considered pharmaceuticals).

The availability and use of topical insect repellents has grown in recent years, largely in response to concerns about West Nile virus and Lyme disease. However, the market for public health pesticides has generally been too small to support significant innovation and registration of new materials. [This has especially been true for pesticides used by public agencies charged with vector control, including mosquito abatement districts conducting area-wide vector control campaigns, international efforts to combat malaria or dengue fever, and military medical entomology teams combating exotic pests like sand flies infected with the leishmeniasis

pathogen.] In all of these realms, the tool box of active ingredients is small and has not changed appreciably in the last two decades.

Unfortunately, vector-borne diseases are major daily threats in many parts of the world today, each year sickening hundreds of millions of people and killing more than a million. The risk from both these diseases is most acute for the poor and for those, like soldiers and sailors, whose work may take them into environments where these diseases and their vectors are endemic. Even in areas where vector-borne diseases have been uncommon in recent decades, the examples of West Nile virus and Lyme disease remind us that changing patterns of demography, trade, and environment have made us all vulnerable to emergent diseases. In this context, the need for a public entity like IR-4 to assist with development and registration of new public health pesticide tools is clear. Though risks are high and increasing, without public support, there simply has not been sufficient private return on investment to bring effective new tools to market.

A particular strength of IR-4 has been the development and implementation of GLP residue studies, and it was appropriate that the first major study by the PHP program was measurement of the residues accumulated by crops and pasture following the aerial application of a mosquito adulticide. The Mosquito and Vector Control Association of California requested that IR-4 help establish an all-crop tolerance or exemption from tolerance for the new adulticide etofenprox. This work required development of new calibration methods and protocols as the small droplets (20 micron) and aerial application (helicopters at 50 feet elevation and 70 knots airspeed) were unlike any previous IR-4 residue work. Two crops were sprayed in two states last fall and a third crop will be tested in early 2010. The lab work also required new methods that will be completed in 2010.

Other early projects include regulatory support for insect repellents and attractants critical to both military and civilian personnel. PHP Program staff are working with EPA and developers of new repellent systems (one personal, one spatial) to facilitate registration of products to protect soldiers from sandflies and a disease they vector – leishmaniasis – that has sickened at least 3,500 U.S. servicemen and